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ABSTRACT

In view of the need for technical communications training in vocational curricula in two-year colleges, a study was made to determine instructional need among graduates of such training now in the workplace. The study sought answers to the following four questions: what sort of communication tasks are assigned to middle level employees; do these employees respond to these tasks orally or in writing; to what audience do such employees communicate; and what kinds of writing concerns are involved in the employees' communication. A questionnaire was mailed to 692 graduates of three community colleges in southeastern Michigan, to which 257 responses were made (37% response rate). Results indicate that requests for data are the communication tasks most frequently assigned, with almost half of the respondents also being asked for progress reports and suggestions. Face-to-face communication is the most common form of response, but job-related writing is also significant (instructions, reports, letters, and manuals). Among the suggestions made regarding the objectives and design of technical writing courses was the simulation of on-the-job writing tasks in course assignments. Graphs of experimental data are included. (DF)

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RESEARCH AS PREPARATION: DETERMINING THE INSTRUCTIONAL NEEDS OF THE TWO-YEAR STUDENT

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Career education is currently in demand in community colleges across the nation. Professor Norman C. Harris of the University of Michigan's Center for the Study of Higher Education attributes this "boom" in postsecondary education to two principal factors: the emergence of a new student who has been attracted to higher education by the career opportunities that exist in practical two-year vocational and technical programs, and the severe shortage in middle level manpower which prompted the development of these programs—a shortage that becomes ominous within the context of four critical problems facing us today: the energy crisis, the world-wide food distribution problem, environmental problems, and the nation's trade deficit.[1]

The nation presently needs well educated, highly skilled personnel for middle level jobs in business, industry, and government. What is a middle level employee? He may be defined as "an individual whose occupational functions demand: (1) some cognitive skills in addition to the manual type proficiencies, and (2) preparation for both cognitive and manual aspects of the job by specially designed programs offered by area vocational-technical schools, various types of proprietary schools, and community junior colleges."[2] Three occupational categories have been designated as middle manpower: semiprofessional or paraprofessional, technician, and skilled craftsman. Two-year institutions have been preparing students for such employment categories in agriculture, business, engineering and manufacturing, allied health, and public service. Moreover, work is becoming increasingly cognitive rather than manipulative.[3] Computer data processing, for instance, has altered work procedures, especially those related to bookkeeping methods, inventory, and payroll practices. Technology has wrought profound changes in employment criteria, resulting in more formal academic preparation for middle level employees. Indeed, semiprofessionals and technicians now hold associate degrees in specific occupational fields (e.g. an Associate in Applied Science in Manufacturing Technology, Medical Records, Business Management, Police Science, etc.).

The two-year graduate seems destined to become increasingly important to the economy as the country enters what Dr. H. Guyford Stever of the National Science Foundation has called the coming "transitional era" which will see preliminary solutions to the problems of energy, agriculture, and industrial productivity by means of international cooperation and the implementation of a systems building approach.[4] A problem solving effort of such magnitude requires not only the combined technical skills of a wide range of specialists

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at work in a variety of organizations, but effective communication skills as well. Ineffective communication can only impair understanding, thus hindering complex business and governmental organizations in their efforts to reach social and economic goals of significance to all of us.

Implicit in the growing demand for quality career education is the need for communication courses that can develop skills which the student will apply to actual job-related communication tasks. Career education, then, has thrust upon the English teacher a new responsibility. In addition to teaching composition and literature courses, English teachers around the country are being asked to design and teach courses in technical communications. However, a technical communications course is not freshman composition with a new course title, and it should not be regarded as such. Instead, it must be an integral part of the student's occupational program. In short, technical communications should be considered a "vocational" course. Some community colleges offer the course through their vocational-technical divisions. For example, Illinois Central College's technical writing course is found in the Engineering and Industrial Occupations Division where it is known as GENTK 201 (General Technology 201).

As a vocational course, technical communications has the same objective as other courses in the student's occupational core: to simulate on-the-job communication tasks just as other courses in the student's major simulate the kinds of technical tasks he will perform as an employee. Simulation requires first an understanding of the middle level employee's role as a communicator. As Professor Thomas L. Warren of the University of South Dakota at Springfield has asked: "What, exactly and precisely, is the job your students will have following graduation and what will be their communication requirements?"[5] Professor Warren recommends a survey of graduates and their employers to determine instructional needs. The information derived helps the teacher establish priorities for the course, an essential task if the student's program requires only one term of technical communications. I took Professor Warren's advice and conducted a survey.

Three community colleges in southeastern Michigan participated in the survey by providing lists of graduates from various associate degree programs in vocational-technical fields. The survey instrument was designed for computer processing. I sought answers to four principal questions in my inquiry:

1. What kinds of communication tasks are assigned to middle level employees on the job?

2. How do middle level employees respond to those tasks? Orally? In writing? When the response is written, what format is chosen (i.e. letter, memo, standardized form)?

3. Who is the audience?

4. What kinds of writing "concerns" are related to middle level communication?

The questionnaire was mailed to 692 graduates. Although time constraints permitted only one mailing, 37 percent of the graduates responded to the survey, a good response rate for a single mailing. I see this response as an expression of concern for the quality of job-related communications.

Survey Results

Kinds of Communication Tasks Assigned:

Figure 1 contains responses regarding the kinds of communication tasks encountered on the job. The left vertical column identifies the task. The horizontal bars represent the percentage of respondents receiving the task; the numbers in the right vertical column are the total number of responses to each question out of 257 interviews.

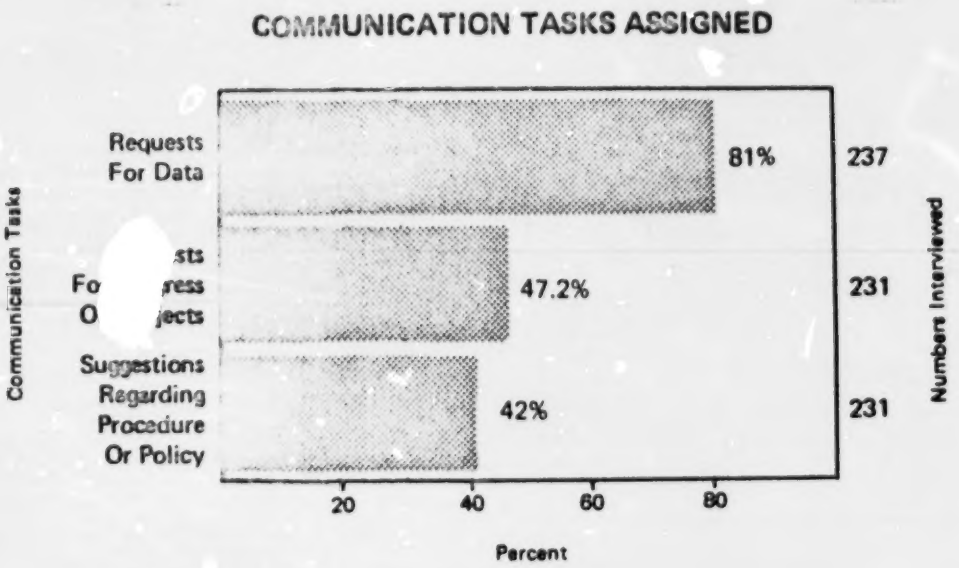

FIGURE 1

My respondents are asked to communicate data (i.e. parts lists, names, dates, etc.), report progress on assigned projects, and to submit suggestions on procedural or policy matters. Communicating data is the most widely encountered task. However, nearly half of the graduates receive requests for progress reports and suggestions involving how things are done in the organization. While requests for messages consisting of relatively raw information are the most

common demands made on the respondents, requests for messages involving analysis and evaluation (i.e. progress reports and suggestions) occur in significant quantity.

Responses to Communication Tasks:

Figures 2, 3, and 4 show how the graduates respond to requests for data, progress reports, and suggestions.

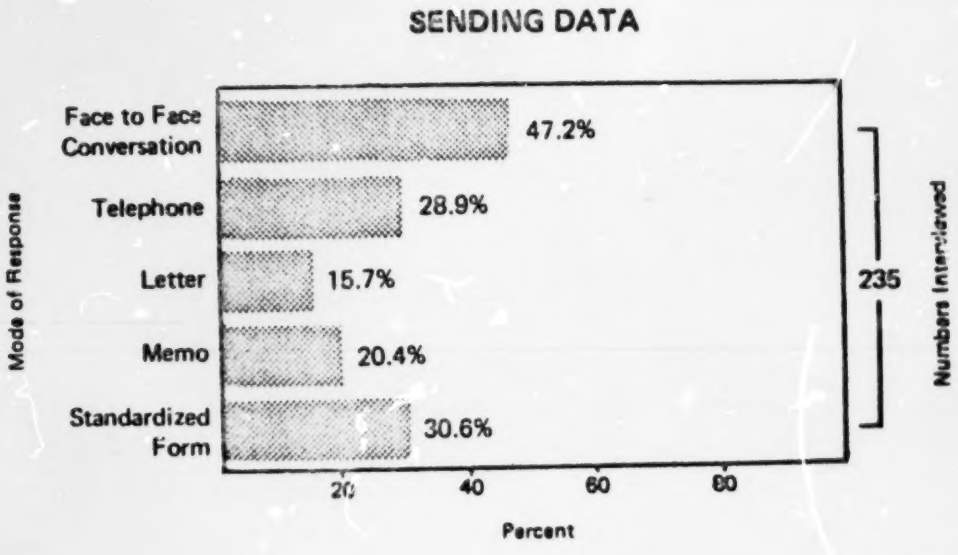

FIGURE 2

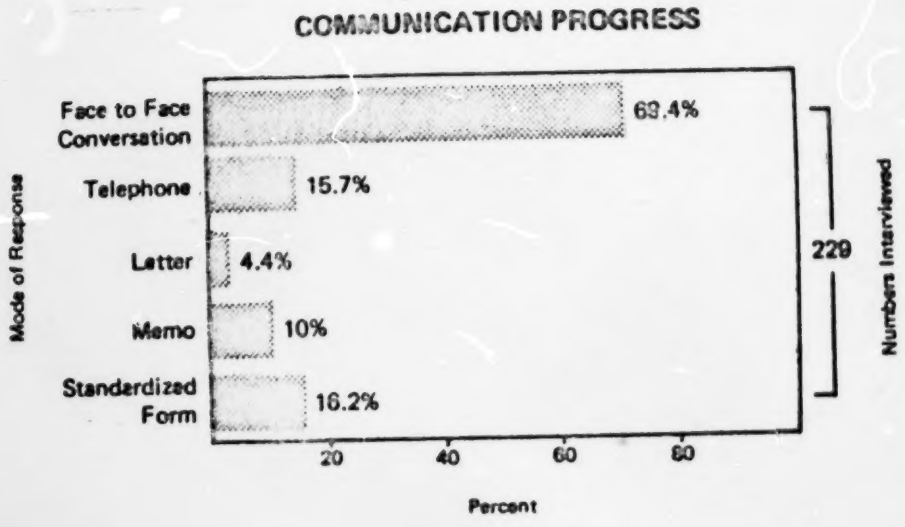

FIGURE 3

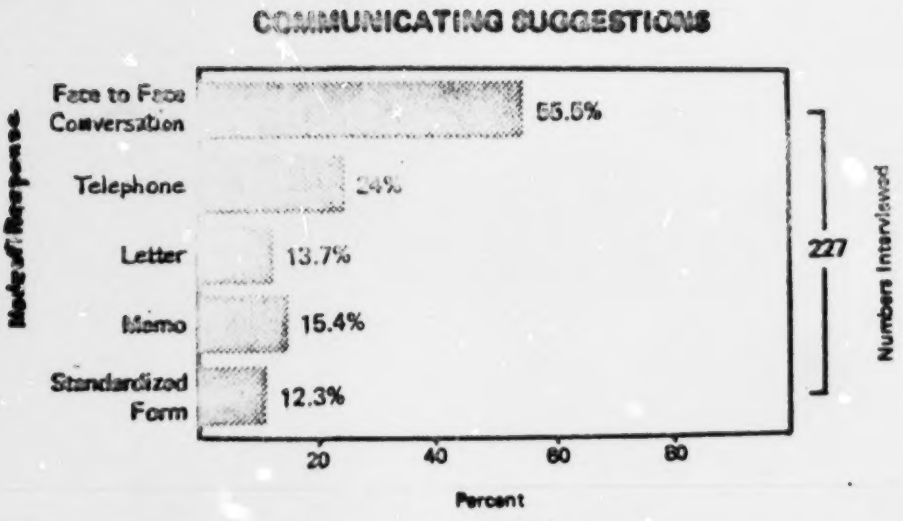

FIGURE 4

Note that the face to face conversation is the prevailing mode for each task. The telephone is also an important mode of communication, especially for sending data and suggestions. The standardized form is the format the graduates prefer for sending data or communicating progress in writing. They prefer the memo for written suggestions. Although the graduates do respond to these tasks in writing, oral communication is used more often.

Job-Related Writing:

Most middle level communication tasks can be accomplished by conversations: briefings, telephone calls, or casual exchanges in hallways, offices or laboratories. However, because the oral mode is used more often than the written does not diminish the importance of writing in middle level communications. When the work of the electronics technician, data processor, or respiratory therapist goes on record because of its significance to an organization's problems, concerns, or objectives, that information is used in the decision making process and must be documented. The writer may be asked to compose a set of instructions, a report, a letter, or a technical manual. He may derive the content for such writing tasks from notes or minutes taken in departmental meetings, from filed reports and letters, and from face to face conversations and telephone calls. In fact, according to 78.7 percent of the respondents, in-

formation obtained initially from telephone conversations ends up in a written message. The writer synthesizes this information, perhaps including his own first hand observations. Job-related writing requires skillful speaking, listening, and reading.

The middle level employees in my study do a significant amount of writing. Figure 5 below contains the type of writing task, the number of graduates who responded to the question for each task, and the percentage of graduates who do each task.

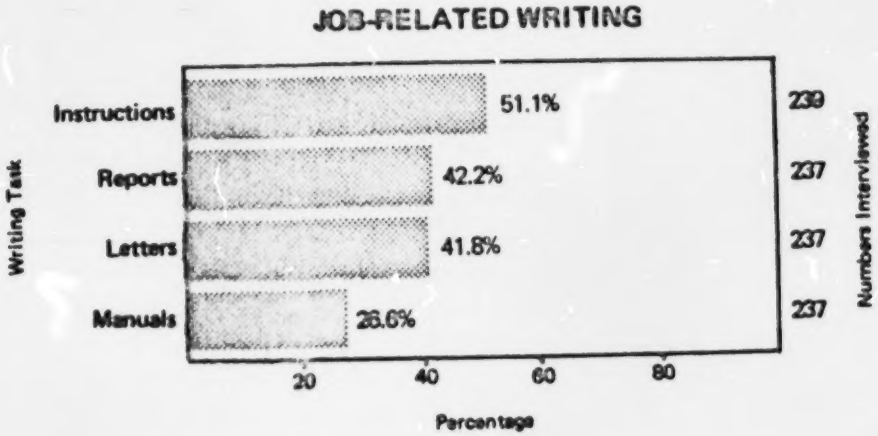

FIGURE 5

Instructions

Instructions are usually read and performed by an audience in the writer's own department, though perhaps working in a different group. Readers tend to be equivalent in rank to the writer or hold lesser positions in the organization. Yet, more than a quarter of the respondents (28.7%) write instructions that are also read by their superiors. This characteristic was most evident among business personnel, and reflects the middle level employee's role as liaison between the professional and the skilled and semiskilled employee. To perform this writing task successfully, the writer must know the needs of his audience and precisely what he wants to accomplish with that audience by means of his written instructions. Indeed, the writer's performance is judged by the reader's performance. This axiom applies to all job-related writing.

Reports

Report writing is an important task for the middle level employee. Nearly half of the respondents (42.2%) write reports; and as Figure 6 illustrates, most reports are read by more than one reader.

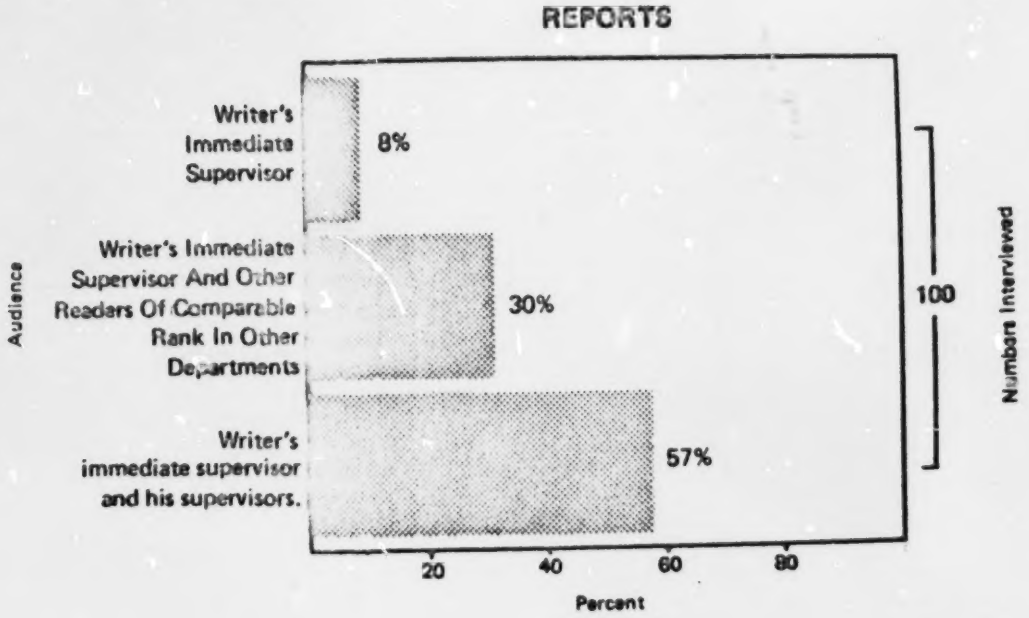

FIGURE 6

The writer's audience may become quite complex. The respondents write reports that travel vertically in the organization's hierarchy from one level of authority to another; their reports also travel laterally, cutting across perhaps several organizational divisions at approximately the same level of authority, but each significantly different from the other in function (e.g. from research and development to production, and on to sales). The writer must know how to identify his audience in terms of their roles in the organization before he can determine how they will *use* his report.

Moreover, the writer may have little, if anything, in common with his audience. Writer and reader may be different in education and training, job experience, and occupational responsibilities.[6] What they share is a problem or an objective of importance to the organization. That problem or objective creates the need to communicate; it establishes the rhetorical situation. The rhetorical situation must be analyzed accurately if the writer is to select the appropriate content, organizational pattern, and format. Solving rhetorical problems is as important as solving technical problems.

Letters

Often that problem or objective which creates the writer's rhetorical situation occurs between organizations or between organziations

and individuals. Of course, the business letter is the principal tool for this task. The percentage of respondents writing business letters (41.4%) nearly equals the percentage of respondents writing reports (42.2%). Letter writing is especially common for administrative assistants in business and government (66.7% and 56.6% respectively).* More than a third of the health technicians write letters (37.5%), but only 15.2 percent of the industrial technicians write letters.

Letters are written to vendors, customers, and government agencies. They are written in response to inquiries or to obtain information. Some respondents commented on the purpose and audience of their letters. For example, a graduate in business occupations works as a "Shipping and Sales Coordinator" and writes letters to customers and to "our own food brokers and warehouse facilities." His purpose: to "clear up questions of credit, shipping dates, and stock requests." A graduate in dental hygiene works as a "Dental Assistant" and writes letters to patients. Her purpose: "If extensive work is to be done, we send a letter explaining the procedures and estimated cost." A graduate in "Manufacturing Engineering Technology" works as a "Quality Problem Analysis Engineer." He writes principally to vendors regarding the "poor quality of purchased parts."

Technical Manuals

Just more than one-fourth of the respondents (26.6%) write technical manuals. This task was reported most often by health technicians (37.5%) and government-employed technicians (33.3%). However, some business personnel and industrial technicians also write manuals (13.9% and 16.5% respectively). In fact, for some graduates, writing manuals is a routine assignment. An electronics technician, for example, writes "a sequence of operations at the end of each job that is drawn up." Another graduate writes "service manuals and technical bulletins" on a full time basis for an automobile company.

In some occupations, writing manuals may be more common than writing reports. As a group, health technicians write more manuals than respondents in other job categories and also, on a percentage basis, writer fewer reports (29.2%). According to one respondent, a computer programmer employed in municipal government, he neither writes reports nor letters, but he writes technical manuals "continuously."

A Job Profile:

The value of the task analysis approach to course design is the general description it provides of the middle level employee's role as a communicator in an organization. However, a survey can also be

*This job category includes accountants, data processing personnel, office managers in business, civil servants, and law enforcement officials in government.

useful for the individual case studies it yields. Case studies can be used to formulate a "job profile" for particular occupations. The case study below, for example, comes from the responses given by a graduate in allied health.

Health Occupations

Background:

Graduate A is twenty-four. He received his Associate's degree in 1975. A works as a "Project Director" for a county service agency. He has had this position less than a year.

Communication Tasks:

A is asked to communicate data, progress on reports, and suggestions on policy or procedural matters. He communicates data by letter, memo, standardized form, telephone, and face to face conversation. To communicate progress on assignments, he uses the standardized form and the face to face conversation. A makes his suggestions in a memo or in a face to face conversation. He is asked to write instructions. His audience ranges from subordinates to superiors.

A's written reports concern "studies and preparations for budgets and proposals." They are read by his immediate supervisor and his superiors, including the "Board of Commissioners and the state office." He writes from twenty to twenty-five reports a year. A also writes business letters to vendors and government agencies. He solicits information, answers requests for information, and orders supplies and equipment. Although A has not yet been assigned the task of writing technical manuals, he does anticipate such an assignment in the future. He says he will probably be assigned to a manual project once a year.

Writing Concerns:

Job profiles can do much to help course planners determine the content of their courses. The information they contain about specific tasks can enable the teacher to design assignments which simulate actual on-the-job writing situations. More time can be given to those communication tasks the student is most likely to encounter in his occupation. However, another way a survey can help the teacher establish course priorities is to examine the middle level employee's concerns as a writer. My survey sought to measure the graduates' concerns for paralinguistic, linguistic, and rhetorical considerations.* What concerns them most when writing to someone at work: organization, spelling, word choice, content and elaboration, grammar, punctuation? Figure 7 contains the graduates' response to this question.

*Paralinguistic features consist of spelling, punctuation, and other methods of representing spoken language in writing. Linguistic features include grammar, usage, and style.

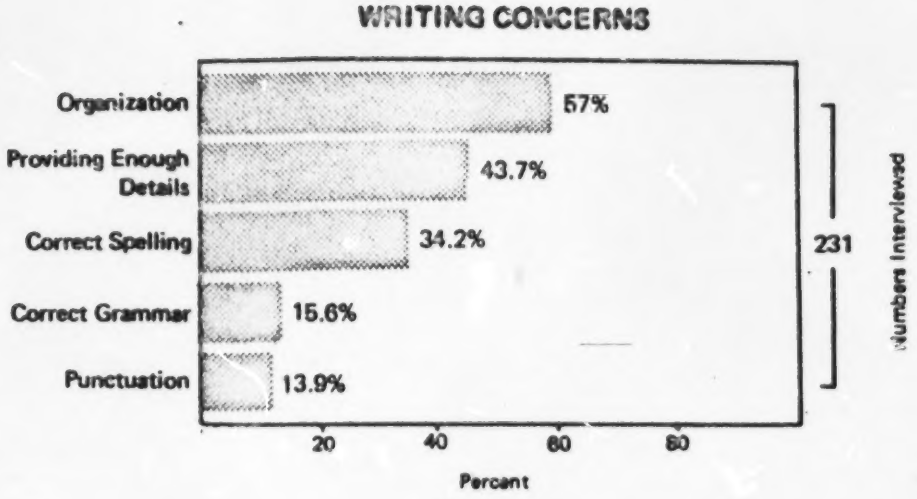

FIGURE 7

Clearly, organization and adequacy of development are the principal concerns of these graduates, not spelling, punctuation, and grammar.

Conclusions and Recommendations

Indeed, there is an inherent danger that a technical communications course may be taught as a remedial English course, becoming what a colleague once described as "spelling for cops." However, the middle level employee needs more than just "the basics" to be an effective communicator. As we have seen, the middle level employee occupies an important position in his organization's communication system. He is responsible for communicating data accurately; he is required to report his progress on assignments; he is asked to submit suggestions regarding policy and procedure. He writes instructions and technical manuals for audiences at various levels of responsibility. His reports are read by a complex audience and become an important part of the organization's decision making process. He represents his organization when he communicates with audiences in other organizations by business letters on matters ranging from inquiries for information to complex and delicate problems involving claims and adjustments. Although the kinds of communication tasks required of the middle level employee vary from one job category to another, the function of the written message he produces reflects the increasingly cognitive nature of his work.

The problem solving involved in determining audience, selecting content, organizing it, and presenting that content in a style and format appropriate for the audience must take priority over surface

features such as spelling. Upon completing his technical task, the technician or administrative assistant has to decide what portion of the information produced by his technical investigation is significant to the various members of his audience. He must abstract *from* his data *for* his audience. It is this problem which must be addressed in a technical communications course; and I think this problem is reflected in the respondents' concern for organization and adequacy of development.

A technical communications course, then, ought to focus on rhetorical problem solving just as vocational-technical courses develop the skills necessary for solving technical problems. To simulate the kind of rhetorical problem solving that occurs on the job, the teacher must design assignments which contain a situational context. Such an approach would require the student to write a letter or report to a specific audience for a specific purpose. A series of interrelated assignments requiring extensive group work as well as individual writing, speaking, and reading could be designed to simulate actual on-the-job communication tasks which, as has been shown, may be approached several ways. A single task may require an oral briefing, a telephone call, a letter, and a memo—each conceivably involving a different audience. These assignments would be based upon case study problems containing material derived from job profiles. In addition, the assignments should be prepared with the assistance of vocational-technical instructors to ensure continuity in the student's occupational core courses and his technical communications course.

Cooperation between the English teacher and his colleague in the vocational-technical division is not only important for the student's success in the work world, but can also lead to mutually rewarding creative teaching experiences for both teachers. For example, at Cincinnati Technical College, a two year technical institute, Terrence J. Glenn and Marcus M. Green of the Department of Communication Skills and Behavioral Sciences have worked inter-departmentally with the college's Engineering Technologies Department to plan their technical writing course. Glenn and Green were "for a time assigned to teams within the Engineering Technologies and have attended departmental meetings, field trips, and recruiting activities."[7] This kind of interaction has allowed these two instructors to plan the technical report assignment with the assistance and cooperation of technical faculty members. The technical report assignment is based on the student's "core subject." This effort of the communications instructors and the technology instructors to make up assignments which "are similar to real life problems rather than ones which are purely academic" exists to help prepare students for the kind of writing they will do for their employers. One such assignment required a group of civil engineering technology students to survey some property owned by the Cincinnati Engineering Society and make recommendations on the location of a new parking lot on the property. The assignment was coordinated by a technology instructor with the cooperation of the Society.

Writing assignments can be linked directly to assignments in the student's occupational core courses. Combining assignments like this during the second year of the student's program can result in realistic writing assignments. In fact, sophomore courses in occupational programs sometimes include internships for on-the-job experience and/or special projects. The following examples come from the *Illinois Central College Catalog*: 1976-77.

> GENTK 255 (2-4 hrs. credit) TECHNICAL PROJECTS 4-8 lab hrs. per week.
>
> MGMT 260 (Fall), 261 (Spring) OCCUPATIONAL INTERNSHIP (3 hrs. credit) 1 lecture and 15 intern hours per week or equivalent.

Comparable courses can be found in police science and health occupations programs. The internship would be especially valuable because it provides an opportunity for the student to study the flow of information throughout an actual organization and the organizational roles of potential audiences.

Therefore, before you write your syllabus, survey past graduates of your college's vocational-technical programs and determine the nature of their roles as communicators on the job. From the data you compile, establish objectives for your course, and with the assistance of vocational-technical teachers create writing assignments which simulate actual job-related writing tasks. In addition, stay in touch with your students after they graduate and go to work. Follow their progress and get their recommendations for improvements in your course. Research and careful planning can produce a course that will prepare your students well for the complex tasks awaiting them.

Notes

[1]Norman C. Harris, "Some Thoughts on Planning New Technical Programs," *Technician Education Yearbook, 1975-1976* (Ann Arbor: Praaken Publishers, Inc., 1975), pp. 2-3.

[2]Angelo C. Gillie, *Principles of Post-Secondary Vocational Education* (Columbus, Ohio: Charles E. Merrill Publications Co., 1973), p. 15.

[3]Grant Venn, *Man Education and Work: Post-Secondary Vocational and Technical Education* (Washington, D. C.: American Council on Education, 1964), pp. 132-133.

[4]Victor J. Danilov, ed., *The Future of Science and Technology* (Chicago: Museum of Science and Industry, 1975), p. 10.

[5]Thomas L. Warren, "Technical Writing Textbook Selection," *Technical Writing Teacher*, II, No. 1 (Fall, 1974), pp. 21-22.

[6]J. C. Mathes and Dwight W. Stevenson, *Designing Technical Reports: Writing for Audiences in Organizations* (Indianapolis: Bobbs-Merrill Company, Inc., 1976), pp. 11-14.

[7]Terrence J. Glenn and Marcus M. Green, "Educational Objectives For An Engineering Technology Technical Writing Course," *Proceedings of the Joint Meeting: North Central Section and Illinois-Indiana Section of the American Society for Engineering Education, April 2-3, 1976* (Washington, D. C.: American Society for Engineering Education), p. 65.